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## NOTICE OF ALLOWANCE AND FEE(S) DUE

66547 7590 07/19/2011  
THE FARRELL LAW FIRM, P.C.  
290 Broadhollow Road  
Suite 210E  
Melville, NY 11747

EXAMINER

BEDNASH, JOSEPH A

ART UNIT

PAPER NUMBER

2461

DATE MAILED: 07/19/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,167

05/25/2007

Jun-Woo Kim

1403-10 PCT US

2581

TITLE OF INVENTION: DEMODULATION APPARATUS FOR EFFICIENTLY EMBODYING ADAPTIVE MODULATION AND CODING METHOD  
IN OFDMA BASED PACKET COMMUNICATION SYSTEM AND METHOD THEREOF

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	10/19/2011

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

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III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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THE FARRELL LAW FIRM, P.C.  
290 Broadhollow Road  
Suite 210E  
Melville, NY 11747

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(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,167 05/25/2007 Jun-Woo Kim 1403-10 PCT US 2581

**TITLE OF INVENTION:** DEMODULATION APPARATUS FOR EFFICIENTLY EMBODYING ADAPTIVE MODULATION AND CODING METHOD IN OFDMA BASED PACKET COMMUNICATION SYSTEM AND METHOD THEREOF

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	10/19/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
BEDNASH, JOSEPH A	2461	370-430000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
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4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER

BEDNASH, JOSEPH A

ART UNIT	PAPER NUMBER
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2461

DATE MAILED: 07/19/2011

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 614 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 614 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

## Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/583,167	KIM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joey Bednash	2461	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendments filed 17 May 2011.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
|---|---|

/Jason E Mattis/  
Primary Examiner, Art Unit 2461

/Joey Bednash/  
Examiner, Art Unit 2461

### **DETAILED ACTION**

This action is responsive to amendments filed 17 May 2011. Claims 1-12 are pending in the application. Claims 1 and 12 have been amended.

#### ***Examiner's Amendment***

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Douglas M. Owens III on 15 July 2011.

The application has been amended as follows:

In claim 12, line 15, the phrase --are read-- has been inserted between the words "modulation methods" and "from among".

#### ***Allowable Subject Matter***

Claims 1-12 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

**Regarding claim 1**, AAPA discloses a demodulation apparatus for receiving signals by an adaptive modulation and coding method, and demodulating the signals, in an OFDMA based packet communication system, comprising:

a QAM demapper (**Fig. 2, QAM Demapper 25**) for performing the QAM demapping process (**Para [10], lines 3-4**) on the received signals by the modulation methods for each of the sub-channels (**Para [7], lines 4-6, DL MAP describes the modulation methods used in the downlink**) and outputting second data which have a number of bits corresponding to the modulation methods for each of the sub-channels, when the modulation methods for each of the sub-channels are analyzed (**Fig. 2, Buffers 24, Channel Decoder 27 Para [11] symbols are delayed in the buffers 24 until the decoder can analyze the frame prefix and map information which suggests the demapper cannot perform demapping until the DL MAP is analyzed wherein once the DL MAP which describes the modulation method and channel coding method is analyzed, the demapper can now perform the demapping according to the QAM modulation method that has been determined from analyzing the DL MAP in the decoder. It would have been obvious to one of ordinary skill in the art that the claimed second data that was output from the demapper after gaining knowledge of the modulation method that was analyzed in the decoder would have a number of bits corresponding to the modulation method that was gleaned from analyzing the DL MAP in the decoder.**);

a slot buffer for storing the second data outputted from the QAM demapper for each slot (**Fig. 2, Slot Buffers 26**); and

a channel decoder (**Fig. 2, Channel Decoder 27**) for decoding the data stored in the slot buffer (**Para [10], lines 13-14**), analyzing modulation methods for each of the sub-channels transferring the analyzed modulation methods to the QAM demapper

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**(Para [7], lines 4-6, Para [11]; It would have been obvious to one of ordinary skill in the art at the time of the invention that the modulation method that is described in the DL MAP that is analyzed by the channel decoder would be transferred to the QAM demapper such that the QAM demapper could perform QAM demapping on the received signals because AAPA indicates the symbols must be delayed in buffers 24 until the MAP information is analyzed by the channel decoder. This provides the suggestion that the channel decoder would analyze the DL MAP information in order to provide the modulation method information gleaned from the analysis to the QAM demapper such that the demapping could now take place.), reading all bits of the second data (Fig. 2, Para [10], the channel decoder decodes the data that has been QAM demapped after it passes “through a slot buffer 26.”) , demodulating the read bits of the second data, and outputting the demodulated data (Para [10], lines 5-6).**

AAPA does not disclose performing a QAM (Quadrature Amplitude Modulation) demapping process on the received signals by a modulation method using a maximum modulation ratio, and outputting first data which have a number of bits corresponding to the modulation method using the maximum modulation ratio until modulation methods for each of the sub-channels are analyzed, and reading only valid data corresponding to the number of bits for the analyzed modulation methods from among all bits of the first data, and demodulating the valid data, once the modulation methods for each of the sub-channels are analyzed by the channel decoder.



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Uesugi (**US 2002/0114379 A1**) discloses performing a QAM (Quadrature Amplitude Modulation) demapping process on the received signals by a modulation method using a maximum modulation ratio and outputting first data which have a number of bits corresponding to the modulation method using the maximum modulation ratio (**Para [0094]; Figs. 3 and 4, Para [0060]-[0067] teaches demapping 64QAM with a 64QAM demodulation pattern; Figs. 5 and 6, Para [0068]-[0074] teaches demapping 16QAM with a 64QAM demodulation pattern; Figs. 7 and 8, Para [0076]-[0080] teaches demapping QPSK with a 64QAM demodulation pattern; It would have been obvious to one of ordinary skill in the art at the time of the invention that demapping QPSK, 16 QAM, 32 QAM and 64 QAM utilizing a 64 QAM modulation pattern or constellation as taught by Uesugi would result in a number of bits which are represented by 64 QAM symbols).**

In Para [0094] of Uesugi, the teaching can be found that one can demodulate all transmitted data without knowing the modulation scheme of the transmitting side by demodulating according to the largest modulation level (i.e. maximum modulation ratio), even when the transmitting side transmits data modulated by a smaller modulation level (i.e. smaller modulation ratio).

In Para [0095] of Uesugi, the teaching can be found that by demodulating according to the largest modulation level, it is possible to remove the delay of demodulating a signal which informs the receiver of the modulation level used by not demodulating the modulation level broadcast signal.

Thus Uesugi suggest that first data can be demodulated without knowing the modulation scheme applied at the transmitter by demodulating according to the maximum modulation ratio; however, the reference does not disclose demapping according to the maximum modulation ratio until modulation methods for each of the sub-channels are analyzed, and reading only valid data corresponding to the number of bits for the analyzed modulation methods from among all bits of the first data, once the modulation methods for each of the sub-channels are analyzed by the channel decoder.

Claim 12, as amended above, is a claim to the method performed by the apparatus of claim 1 and is allowable for the reasons presented above in that claim 12 includes a limitation of “only valid data corresponding to the number of bits for the analyzed modulation methods are read from among all bits of the first data, once the modulation methods for each of the sub-channels are analyzed.”

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joey Bednash whose telephone number is (571)270-7500. The examiner can normally be reached on Mon-Fri 9:00 AM to 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joey Bednash/  
Examiner, Art Unit 2461

/Jason E Mattis/  
Primary Examiner, Art Unit 2461